

Application No. 10/668,883
Amendment dated April 27, 2006

Docket No.: 61843(51035)

REMARKS

Claims 6-12 and 17-23 are pending in the application. Claims 1-5 and 13-16 were canceled in the amendment filed on March 21, 2005.

Applicants make these amendments without prejudice to pursuing the original subject matter of this application in a later filed application claiming benefit of the instant application, including without prejudice to any determination of equivalents of the claimed subject matter. Support for these amendments appears throughout the specification and claims as filed. No new matter is introduced by these amendments.

As an initial matter, Applicants thank the Examiner for the courtesy of the telephone interview on April 4, 2006. Applicants appreciate the consideration provided by the Examiner.

35 U.S.C. §103 (a) Rejection

Claims 6-12 and 17-23 remain rejected as unpatentable over Krishna et al. (Agricultural Wastes, 1986, 17, pp. 99-117), as evidenced by Newmark et al. (US 6,391,346), Muller (GB 2072657), and Haas et al. (US 6,423,317), in view of Hunter et al. (US 5,114,708), and in view of Johnson et al. (GB 2330076). Applicants disagree and respectfully traverse.

It is alleged that Krishna provides for spent hop preparations, and that it would have been obvious to one of ordinary skill in the art to combine the teachings of Krishna with Newmark, Muller, and Haas et al., and further in view of Hunter and Johnson, to arrive at the hop acid composition utilized in the claimed invention.

As a courtesy to the Examiner, Applicants reiterate the text of the instant independent claim 6, which provides, "A method for increasing food and energy uptake from a livestock feed by livestock comprising: administering to the livestock a feed having **an effective amount of hop acid capable of decreasing the production of unoxidized carbon sources** in a digestive system

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fluid of the livestock." Clearly, claim 6 of the instant invention indicates that the decrease of unoxidized carbon sources is a result of effective amount of hop acid.

The attention of the Examiner is directed to Example 4 on page 6 of the instant specification. Table 4 clearly indicates that upon addition of hop acids, the butyrate levels drop from 35.0 $\mu\text{mol/mL}$ with no hop acid, to 5.6 $\mu\text{mol/mL}$ with 2.5 ppm hop acid. Other concentrations were examined and support the finding that the addition of hop acid to a livestock feed results in a decrease of butyrate. Since butyrate is broken down into methane, the measurement of butyrate levels is a method of determining antimethanogenic activity.

In contrast, Krishna as understood by the Applicants, discloses spent hop preparations which reduce methane output in a rumen simulator. Although the Krishna spent hop preparations ($\text{H}_1\text{-H}_4$) include from about <0.02% to 0.14% hop acids (Table 3), there is no indication that the hop acids, present in any amounts, are responsible for the antimethanogenic activity observed in the rumen simulator. Krishna indicates that the spent hop composition $\text{H}_1\text{-H}_4$ comprise a number of factors, including relatively high concentrations of nervonic, erucic, and tannic acid, lowered concentrations of oleic and linoleic acid (page 104-105), numerous ash, fiber, and protein components (Table 2), and numerous unidentified compounds. Further, Krishna states that no attempts were made to determine what factors were responsible for antimethanogenic activity (page 112). Thus, Krishna provides no specific teaching that hop acids provide antimethanogenic activity.

Likewise, none of the teachings of Newmark, Muller, Haas, Hunter, or Johnson teach that hop acids are responsible for antimethanogenic activity. Specifically, Newmark teaches the use of a hop acid extract to reduce inflammation, Muller teaches a method of extracting hop acids from hop products, Haas teaches the use of extracted hop acids to kill protozoa, Hunter teaches that polymers (not hop acids) are useful to provide a shift in a microorganism population, and Johnson teaches that extracted hop acids are useful to inhibit certain Clostridium bacteria in food products and beverages.

Application No. 10/668,883
Amendment dated April 27, 2006

Docket No.: 61843(51035)

Applicants' claimed subject matter relates specifically to hop acids in methods for increasing food and energy uptake in livestock. Applicants submit that Krishna **does not** teach or suggest that the hop acids in the spent hop compositions H₁-H₄ are specifically responsible for antimethanogenic activity. Applicants also indicate that none of the teachings of Newmark, Muller, Haas, Hunter, or Johnson teach or suggest that hop acids are responsible for antimethanogenic activity. Therefore, Applicants indicate that Krishna, in combination with Newmark, Muller, Haas, Hunter, or Johnson, does not teach or suggest the use of hop acids for antimethanogenic activity.

Based on the foregoing remarks, Applicants therefore submit that a *prima facie* case of obviousness is not made out by Krishna in view of Newmark, Muller, Haas, Johnson, and Hunter and respectfully request that the rejection be withdrawn.

In view of the above response, Applicants believe the pending application is in condition for allowance. Should any of the claims not be found to be allowable, the Examiner is requested to telephone Applicants' undersigned representative at the number below. Applicants thank the Examiner in advance for this courtesy.

The Director is hereby authorized to charge or credit any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 51035-61843.

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Respectfully submitted,

By 

Dwight D. Kim, Ph.D.

Registration No.: 57,665

Jeffrey D. Hsi, Ph.D.

Registration No.: 40,024

EDWARDS ANGELL PALMER & DODGE, LLP

P.O. Box 55874

Boston, Massachusetts 02205

(617) 439-4444

Attorneys/Agents For Applicant